



NUCLEUS
RESEARCH

CONTROL TOWER TECHNOLOGY VALUE MATRIX 2018

ANALYST

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THE BOTTOM LINE

In 2018, control tower vendors continued to push the boundaries of what customers are ready to adopt, with tools and automation that only the most sophisticated users can leverage. The challenge for vendors has become leading customers along the maturity path to be able to use the technologies available today. Visibility in real time is still the ultimate goal for many customers, yet vendors are already making moves to connect planning with execution and deliver tools that help organizations start to automate the more laborious tasks, allowing more time for analysis and strategic decision making.



MARKET OVERVIEW

Supply chain control towers are an increasingly vital tool for enterprises to gain visibility over their extended value chains. Striving to be the connective tissue between planning and

execution, control towers are increasingly an avenue by which companies start to modernize and digitize their supply chains, cutting across organizational silos. By the nature of the solutions and their reliance on real-time data, control towers inherently require organizations to move away from spreadsheet planning and disparate, disconnected systems. In terms of value delivery, the bar for control towers is relatively low, since the solutions' visibility is unprecedented in most organizations, where business processes don't cut across traditional operational silos. Organizations can achieve better collaboration with trading partners and logistics providers as well as identify potential issues sooner, allowing supply chain planning and execution to function more proactively rather than reactively.

In this Value Matrix, Nucleus evaluated the control market vendors based on their product usability and functionality and the value that customers realize from the capabilities of the product (Nucleus Research, *s142 – Understanding the Value Matrix*, September 2018). As a snapshot of the control tower solution market, this research is intended to help inform consumers about how well vendors are delivering value to customers, and what a prospect can expect moving forward based on the investment vendors are making today.

In 2018, some supply chain control tower vendors delivered tools that surpassed the ability of customers to adopt the technology. Along the overall supply chain maturity curve, Nucleus found that the majority of customers are still relatively low in their readiness to adopt technologies like machine learning and artificial intelligence (AI), which vendors are looking to bring to their solutions. With an understanding that customers are on the "crawl, walk, run" continuum, vendors have sought to build tools that reduce the barriers to acceptance and address low-hanging fruit.

Nucleus has developed a maturity model for supply chain customers as they increase their sophistication and adoption of tools that add automation and intelligence (Nucleus Research, *s175 – Assessing Supply Chain Management Maturity*, November 2018). In order to move beyond unintegrated functional solutions, customers are looking for visibility across their enterprise. If they are farther along, companies begin looking outside the proverbial four walls of the enterprise and into upstream and downstream trading partners in order to extend the reach of planning and execution orchestration. Control tower vendors provide an important first step towards supply chain maturity, with many vendors going significantly further than just visibility with their solutions.

Looking ahead, vendors are continuing to invest in technologies that will decrease the amount of mundane, day-to-day management of supply chain errors, with the goal of providing capabilities that allow the system to handle the rectification of issues. By providing the contextual data around a supply chain, vendors are training machine learning algorithms to both suggest options on how to proceed and give a prognosis based on historical outcomes. Vendors seek to give supply chain professionals more time to make strategic decisions and manage exceptions. Though many vendors are cautious about deploying a technology before it is ready to deliver value, customers that have made the move to start applying these technologies attest to the benefits they realize, even when the implementation is narrow.

Nucleus found that tools that help adoption and ease change management for users are drivers of significant value. Change within the supply chain has proven incredibly difficult for many organizations, with the metrics of success often based only on incremental improvements rather than wholesale transformations. Leading vendors in the 2018 edition of the Control Tower Technology Value Matrix are making it easier for companies to use their technology by delivering the right information to the right user at the right time.

LEADERS

Leaders in the Value Matrix include E2open, Kinaxis, JDA Software, One Network, and SAP.

E2OPEN

E2open continues as a Leader in the 2018 Control Tower Value Matrix, having made a series of acquisitions to extend its capabilities in downstream execution. Geared toward global enterprise customers with extended value chains, E2open brings together its different planning and execution solutions with a consistent user interface. It is also underpinned by a multi-enterprise network that delivers a single consistent data model.

Over the last few years, E2open has made a series of acquisitions designed to extend its capabilities beyond its beginnings in planning. Of late, downstream logistics has been the focus, with E2open purchasing the transportation management vendor, Cloud Logistics, and ocean shipping vendor, INTTRA (Nucleus Research, *s166 – E2open expands downstream*, October 2018). Consolidated under its Harmony user interface, E2open is looking to offer visibility from end-to-end as well across trading partners outside the enterprise. E2open has been investing in capabilities that will allow customers to perform root cause analysis on errors. The vendor is also investing in delivering an activity stream that will integrate any unstructured activity that connects to a business process.

The vendor seeks to enable the convergence of supply chain management between the external ecosystems that surround an enterprise with the planning and execution systems that E2open provides. With the vendor still in acquisition mode, customers should expect E2open to continue to fill out their functional needs.

KINAXIS

Kinaxis is a Leader in the 2018 version of the Control Tower Value Matrix with its RapidResponse platform focused on real-time planning. Providing robust scenario and what-if analysis, Kinaxis has been building out industry-specific functionality focused on high tech, life sciences, automotive, industrial, consumer packaged goods, and aerospace and defense. Kinaxis has been investing in the connectivity of its platform to get data in and out

of the planning system more easily and provide better visibility across the organization to users.

RapidResponse delivers value through its flexibility, which allows users to configure the user interface based on role and which key performance indicators (KPIs) are most relevant. Looking ahead, the vendor is investing in practical applications of artificial intelligence and machine learning technology that enable the Self-Healing Supply Chain. Kinaxis is focusing on ensuring user adoption of its innovations, starting with lead times and adding capabilities as users can accept them. An additional area of focus is further easing the integration process for RapidResponse. Kinaxis is looking to enable integration without predefined schemas and inferred relationship mapping.

The flexibility and ease of use of RapidResponse continues to be a major differentiator, with customers able to go live quickly and start realizing value. Supporting some of the largest global companies with complex value chains, Kinaxis is making investments today that will further cement its place in future editions of the Control Tower Value Matrix.

JDA SOFTWARE

JDA Software continues as a Leader in the 2018 Control Tower Value Matrix. The vendor delivers control tower capabilities with its supply chain planning applications. JDA's applications sit on its platform technology that allows development and integration of third-party services and extension applications, as well as data and analytics services from JDA's new Luminate product extensions. Announced at its annual user conference, JDA Luminate is a suite of core product enhancements that are cloud-native, platform-agnostic microservices and components that leverage many of the technologies delivered by JDA's cloud partners in Microsoft and Google (Nucleus Research, *s82 – JDA expands platform play at FOCUS 2018*, May 2018).

JDA's strategic goal is to deliver an autonomous supply chain that relies on visibility as its foundation but adds predictive and prescriptive analytics as well as leveraging context-sensitive self-learning capabilities that help orchestrate the supply chain from end-to-end. Until now, JDA's solution for control tower, the Agile Workbench, offered master planning visibility. With its Luminate Control Tower, JDA is extending visibility into execution, thus enabling collaboration between internal and external stakeholders and execution workflow orchestration. The vendor has been proactive in establishing partnerships with third-party vendors that provide relevant data to its control tower, such as real-time weather, transportation, and track-and-trace. As more customers move to the Luminate Control Tower, Nucleus expects JDA to further push the boundaries on the visibility and control that customers can realize.

ONE NETWORK

One Network is a Leader in this year's edition of the Control Tower Value Matrix. The vendor delivers its control tower application on top of its multi-party business network,

which has over 60,000 companies and 16,000 carriers on it. One Network has been investing in delivering autonomous intelligent agents as parts of its applications, which are designed to simplify and optimize transactions across the entire value chain. Able to offer decision support or execution automation, One Network's agents operate on subnets that partition the larger network, so the agents can optimize and replan in real-time. One Network delivers a single version of the truth for all network members, enabling buyers, suppliers, logistics, and planners to operate based on the same information.

One Network has specialized its solution to support automotive, retail, high tech, construction, pharma, and aerospace and defense, and provides applications that manage both planning and execution. Customers can plan and optimize across organizational silos with execution data fed back into the planning engine to ensure it is up to date. The vendor has been investing in bringing Blockchain technology—which supports Ethereum and Hyperledger—to its platform, providing private multi-party ledgers on which customers can develop modules and set permissions for trading partners. With many of its customers on the cutting edge of what control tower technology is delivering, One Network is helping transition customers from siloed legacy systems to a collaborative, real-time network.

SAP

SAP is a Leader in the 2018 Control Tower Value Matrix. SAP's Supply Chain Control Tower integrates with its Integrated Business Planning (IBP) solution suite and combines real-time visibility and analytics that measure the impact of exceptions and help users make better decisions. Along with SAP IBP, the control tower solution can be deployed on SAP HANA Platform, as well as integrated with SAP Leonardo (for analytics) and SAP Ariba (for supply chain collaboration). To gain more complete visibility, the solution can draw on data from enterprise resource planning (ERP) systems, transportation management, and advance planning and optimizer (APO) as well as third-party and external systems.

The vendor has continued to invest in machine learning technology that is designed to generate decision recommendations for the user. In addition to decision-making support, the control tower solution provides collaboration capabilities with external trading partners as well as alerts based on exceptions to business rules. Based on the SAP Fiori user interface, customers are given dashboards that provide KPIs and real-time supply chain performance data. Designed to support the largest and most complex enterprises, SAP's Supply Chain Control Tower can help organizations mature their supply chain processes and improve overall performance.

EXPERTS

Experts in the Value Matrix are Amber Road, Infor, and PearlChain.

AMBER ROAD

Amber Road is an Expert in the 2018 edition of the Control Tower Value Matrix, specializing in moving goods across borders. Amber Road provides visibility across a customer's execution network. Operating as a one-stop-shop for global trade management, Amber Road enables customers to build a digital version of their supply chains, thereby connecting customers with overseas suppliers, logistics providers, freight forwarders, customs brokers, and carriers. The software is supported by dynamically changing content around trade rules and tariffs which are gathered, translated, and interpreted by in-house specialists. Both internal stakeholders and external partners are linked through a common platform allowing users to collaborate and implement controls.

In addition to execution visibility, customers can leverage the software for global sourcing, risk and quality management, transportation management, production management, and import and export management. The solution delivers many capabilities out-of-the-box, but for customers that need additional features, Amber Road provides configurability that allows for customizations. An API integration layer enables customers to connect external, third-party, and IoT data they need to model their operations. Amber Road has invested in automating the collection of data and reducing manual tasks, so users can manage by exception on a global basis. The vendor is investing in delivering global inventory visibility capabilities, total landed cost management, and origin management. To improve usability, the vendor is working on improving process orchestration and workflow as well as reporting capabilities. Setting the standard for execution visibility, Amber Road's current investments should improve its position in future editions of the Value Matrix.

INFOR

Infor is an Expert in the 2018 Control Tower Value Matrix. Since its acquisition of GT Nexus, Infor has been investing in expanding the solution beyond its foundation in global trade management. After going quiet as to the future of the solution, Infor announced the next generation of its control tower solution, called Control Center, which is scheduled to become generally available early in the coming year. Building on the capabilities GT Nexus delivered, Control Center will feature a single instance multi-enterprise business network and combine the analytical capabilities of Infor Coleman with supply chain execution.

Control Center will introduce a new user experience and bring the intelligence of Coleman machine learning to help users with predictions about what will happen based on analysis of historical and real-time data. Early adopter customers are currently tracking shipments with IoT capabilities to better predict delivery times, with truck tracking coming soon. With a long heritage of supporting global supply chains with enterprise-to-enterprise visibility, Infor's new solution will have improved usability, which should help customers achieve value and improve the vendor's positioning in future iterations of the Value Matrix.

PEARLCHAIN

PearlChain is an Expert in the 2018 Control Tower Value Matrix, delivering several areas of supply chain management to specific industries. The vendor specializes in managing the contractual obligations between parties and the complex fulfillment processes that are required. Focus areas include food and process manufacturing, construction, automotive, and ship management. The vendor is designed to connect planning and execution across sales and operations planning, manufacturing execution, warehouse management, contract management, shop floor control, purchasing, and order management.

The vendor's primary offering, called Core, offers visibility of shipments down to the SKU level, as well as dashboards based on roles. The solution takes real-time constraints into account when modeling the details of contractual agreements. Delivered as a cloud or on-premises offering, PearlChain Core provides a single version of the truth to users, with a service-based architecture that integrates with legacy ERP systems. The vendor has continued to deliver usability enhancements and additional services that improve the value that customers realize from the solution.

FACILITATORS

Facilitators in the Control Tower Value Matrix are Elementum and LLamasoft.

ELEMENTUM

Elementum is a Facilitator in the 2018 Control Tower Value Matrix. The vendor's control tower is called Orchestration Platform and provides multi-enterprise visibility. The solution is delivered as software-as-a-service and tracks actions, participants, and decisions across workflows. Designed to layer over transactional systems, the solution is highly configurable and delivers flexibility that helps customers achieve value.

The vendor has been investing in artificial intelligence technologies designed to assist decision making. Capabilities include natural language processing and predictive analysis for shipments, inventory, and supply chain errors. The solution also allows automation of routine errors to reduce manual interventions. Incident Management platform learns the workflows in order to successfully resolve future issues. Working in tandem with Elementum Product Graph, customers can digitally map their global supply chains' connecting nodes and track shipment in real-time. Continued investments in functionality should help the vendor's position in future editions of the Value Matrix.

LLAMASOFT

LLamasoft is a Facilitator in this year's Control Tower Value Matrix. Focused squarely on supply chain design, the vendor is bringing to market its Digital Design & Decision Center, which contains three core capability areas: Visualizer, Modeler, and App Builder. LLamasoft Visualizer enables users to analyze the performance of their end-to-end supply chain and make adjustments that optimize performance as well as track key metrics and identify potential issues. The solution's control tower capabilities give customers the ability to easily evaluate different scenarios based on service, cost, risk, and any other relevant KPIs.

With the mantra of "Planning by Design," LLamasoft's Data Hub, which delivers a global data model that enables users to operate on a single version of the truth, allows customers to map and visualize their value chain as well as perform extensive scenario analysis. Additionally, the Data Hub infrastructure enables collaboration and analysis across the entire value chain.

With a cloud-based architecture, LLamasoft customers frequently establish a Center of Excellence to get the most value out of the solution and its flexible use-cases, making use of the integrated platform to perform analyses of their supply chain configuration in order to optimize and recalibrate. Able to service some of the most complex supply chains for some of the world's largest companies, LLamasoft continues to expand its functionality and should expect to see its position improve in future editions of the Value Matrix.

CORE PROVIDERS

Core Providers in the Value Matrix are Elemica, MP Objects, ShipitSmarter, and Viewlocity.

ELEMICA

Elemica is a Core Provider in the 2018 edition of the Control Tower Value Matrix. With the visibility part of its solution set, Elemica provides three applications: Elemica Pulse, Elemica Trace, and Elemica Risk. Elemica Pulse provides end-to-end visibility and monitoring. Combined with Elemica Digital Supply Network, Elemica Pulse establishes rules-based event management and machine learning analysis of exceptions. Pulse also provides early alerts to discrepancies and other errors.

Elemica Trace, which was released in March 2018, provides shipment visibility in real-time, collecting signals from carriers and shipment data to predict delivery and identify potential issues. The solution also allows the user to manage by exception, with email alerts and notices issued when a shipment is delayed.

Elemica Risk leverages a partnership with the carrier, DHL, by integrating Risk with DHL Resilience 360, helping users track incidents and connect them to the supply chain impact.

By connecting issues to the customers' granular data, such as purchase orders, users can understand the impact on individual stakeholders and take the appropriate action to rectify the situation. Having undergone a major rebranding overhaul and with its new product capabilities, Elemica is on a path to improve the value it delivers and its position in future editions of the Control Tower Value Matrix.

MP OBJECTS

MP Objects (MPO) is a new entrant to the Control Tower Value Matrix in 2018 as a Core Provider. The vendor is focused on supply chain orchestration and delivers two solutions that address visibility: MPO Control Tower and MPO Supply Chain Visibility. In addition to control tower capabilities, MPO offers solutions that cover e-commerce fulfillment, distributed order management, spare parts management, reverse logistics, supplier collaboration, and vendor-managed inventory. In order to manage a customer order from its creation to delivery, the vendor connects advanced planning systems, ERPs, supply chain execution, transportation management systems, warehouse management systems, and track and trace systems. Founded in 2010, MPO has been successful in winning customers based across several verticals including healthcare, high tech, automotive, wholesale distribution, industrial manufacturing, and logistics.

As customers increase the complexity of their supply chains and value chains get longer, MPO is positioning its control tower as the bridge between systems and balancing analytics with operations. MPO is building a multi-enterprise network to support the growth and needs of global enterprises. Nucleus expects that as MPO continues to build on and go to market with its multi-enterprise business network, it will extend its ability to service forward-looking customers who want to optimize order flows across their global supply chains.

SHIPITSMARTER

ShipitSmarter is a Core Provider in the 2018 Control Tower Value Matrix. Delivering cloud-based software-as-a-service solutions, ShipitSmarter specializes in managing the entire shipment lifecycle from order creation to financial settlement. Along the shipment lifecycle, the vendor delivers capabilities addressing system integration, carrier management, transportation management, freight audit, and financial management. ShipitSmarter prides itself on its independence from the carriers with which it works, helping customers achieve value by functioning as a strategic sparring partner.

In August, the vendor announced a new business intelligence tool called Advanced Reporting. Designed to bring greater configurability and simplified dashboards to its toolset, ShipitSmarter's new service is responding to the needs of customers to be able to view accurate real-time data presented in digestible ways. As a best-of-breed vendor, ShipitSmarter delivers value to customers that are looking address their complex shipment management processes.

VIEWLOCITY

Viewlocity Technologies is a Core Provider in this year's edition of the Control Tower Value Matrix. The vendor has a long history of delivering solutions focused on supply chain visibility and control. Viewlocity has a suite of solutions covering supply chain design, inventory and asset management, supply chain management, logistics and transportation, planning and production, order lifecycle management, and supplier management. All of Viewlocity's products are offered as SaaS, managed services, or license deployments. The vendor focused on several industries with its solutions, including automotive, aerospace, manufacturing, retail, high tech, consumer goods, and logistics.

Founded in 1999, Viewlocity is owned and managed by Fog Software Group, which is an operating group of Vela Software Group, which is an operating group of Constellation Software Inc., a global software service aggregator with groups operating in 60 market verticals. Since its acquisition, investments in Viewlocity's solutions have been minimal, with the controlling interests continuing to push the vendor's Control Tower Platform solution. Although it is able to service global customers, without further investment in new capabilities, the vendor will continue to lose ground relative to the rest of the market.